

REMARKS

Claims 11-13 and 20 are pending in the above-identified patent application. Claims 1-5, 8, 10 and 19 have been withdrawn from consideration and claims 6, 7, 9 and 14-17 have been canceled previously. Claim 11 has been amended, the identifier for claim 13 has been corrected and claim 18 has been canceled by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, claim 13 was objected to due to informalities and claims 11-13, 18, 20 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,964,952 (Kunze-Concewitz).

35 U.S.C. § 102(b) Claim Rejections

Claims 11-13, 18, 20 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,964,952 (Kunze-Concewitz). Reconsideration is respectfully requested.

Claim 11 has been amended to further clarify the invention. In particular, claim 50 has been amended to recite:

[a] one-by-one surface purification method used in a manufacturing process of semiconductor devices or liquid crystal display devices, wherein substrates are to be purified one by one, said method comprising the steps of:
generating mist-containing saturated steam;
bringing said mist-containing saturated steam into contact with a surface of each of said substrates by using a steam introduction valve; and
spraying said mist-containing saturated steam onto said surface by using a steam spraying nozzle,
wherein said mist-containing saturated steam is used to purify said surface.

Support for the amendment is shown at least in FIG. 1 and at least provided at page 28, lines 16-22 of the specification. Thus, it is respectfully submitted that the amendment raises no question of new matter.

Kunze-Concewitz discloses a method and device for cleaning contaminated surfaces with both water and steam.¹ In particular, Kunze-Concewitz discloses steam **16** emerging from the nozzle **1** strikes the surface **24**, so that the contaminants adhering to the surface **24** or located in indentations of it are loosened by the kinetic energy; and if wet steam **16** is sprayed on the surface **24**, then the contaminants are loosened by the liquid droplets striking them or by the kinetic energy of these droplets.² Further, Kunze-Concewitz discloses that the water vapor also condenses on the surface and is partly re-evaporated by the steam that follows it, with the vapor bubbles collapsing immediately afterward or bursting at the surface of the substrate and that these impulsive forces cause further loosening of the particles.³

Furthermore, Kunze-Concewitz discloses surfaces **24** are sprayed with wet steam (or super heated steam) **16** via spray nozzles **1**.⁴ Moreover, Kunze-Concewitz discloses that, via water lance **46**, water **18** is fed onto the surface **24**.⁵

However, it is respectfully submitted that Kunze-Concewitz does *not* disclose anything to supply liquid, gas or steam to the surface, other than the spray nozzles **1** and the water lance **46**. That is, the spray nozzle **1** merely functions as a nozzle; the wet steam **16** is sprayed on the surface and the water lance **46** merely functions as a pipe to jet out water **18**.

In contrast to the claimed invention, Kunze-Concewitz nowhere discloses, as claim 11 recites:

generating *mist-containing saturated steam*;
bringing said mist-containing saturated steam into contact
with a surface of each of said substrates *by using a steam
introduction valve*; and
spraying said mist-containing saturated steam onto said
surface *by using a steam spraying nozzle*,
wherein said mist-containing saturated steam is used to
purify said surface (emphasis added).

That is, in contrast to the claimed invention: Kunze-Concewitz nowhere discloses “bringing the mist-containing saturated steam into contact with a surface; and nowhere discloses the two different

¹ Kunze-Concewitz at ABSTRACT.

² *Id.* at FIG. 3; and column 5, lines 15-20

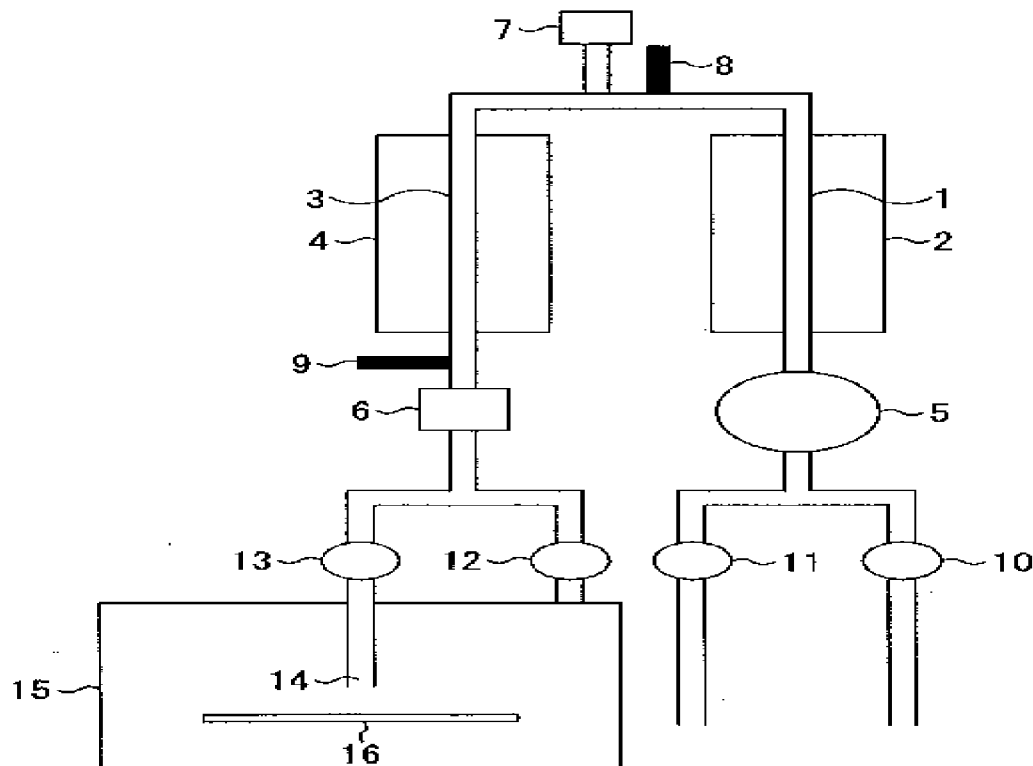
³ *Id.* at FIG. 3; and column 5, lines 20-25.

⁴ *Id.* at FIGs. 1, 3, 12, 13, 14, 15; and column 4, line 28)

steam processing steps of: (1) “bringing said mist-containing saturated steam into contact with a surface by using a steam introduction valve” and (2) “spraying said mist-containing saturated steam onto said surface by using a steam spraying nozzle,” as recited in amended claim 11. That there are clearly two different steam processing steps in the claimed invention is further illustrated in **FIG. 1**, as shown below, and by the following disclosure in the specification:

[w]hen steam is *introduced* into a processing chamber **15**, *an introduction valve 12 is opened*. When steam is *sprayed* onto a surface to be processed, *a steam-spraying valve 13 is opened and steam is sprayed* onto the surface **16** to be processed, through a steam-spraying nozzle **14**.⁶

FIG. 1



⁵ Id. at FIG. 12; and column 6, lines 46-52.

⁶ See specification at FIG. 1, page 27, lines 16-22.

Furthermore, the two different steam processing steps of: (1) “bringing said mist-containing saturated steam into contact with a surface of each said substrates by using a *steam introduction valve*,” and (2) “spraying said mist-containing saturated steam onto said surface by using a *steam spraying nozzle*” are *not* disclosed by Kunze-Concewitz (emphasis added). This can be seen by referring to **FIG. 1** above which explicitly shows the claimed steam introduction valve **12** and a steam spraying nozzle **14** being connected to the valve **13** and arranged adjacent to a surface **16**. As discussed above, Kunze-Concewitz discloses neither.

Thus, in contrast to what is disclosed by Kunze-Concewitz, the above step (1) of bringing the mist-containing saturated steam into contact is achieved by only the valve being detached from the surface **16** without using any nozzle. Accordingly, the limitations of “bringing into contact” and “spraying” are completely different ways of supplying the steam onto the surface, as compared to Kunze-Concewitz.

Moreover, it is respectfully submitted that Kunze-Concewitz nowhere discloses the purification effects of the steps of: (1) “bringing the mist-containing saturated steam into contact with a surface” and (2) “spraying the mist-containing saturated steam on the surface” have of the lift-off effect of steam and collision force of steam, respectively.

Therefore, it is respectfully submitted that Kunze-Concewitz does not disclose, anticipate or inherently teach the claimed invention and that claim 11, and claims dependent thereon, patentably distinguish thereover.

Conclusion

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

The Office is authorized to charge any necessary fees to Deposit Account No. 22-0185.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 21776-00042-US1 from which the undersigned is authorized to draw.

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Respectfully submitted,

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